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(54) Title: RADIOACTIVE TRANSITION METAL-IMIDO HETERO-DIPHOSPHINE COMPLEXES, THEIR PREPARATION AND RADIOPHARMACEUTICAL COMPOSITIONS THEREOF

(57) Abstract: The present invention provides radioactive metal heterocomplexes of formula (I): [(Me=N-R) L₁L₂] +Z (I), wherein Me, R, L¹, L² and Z⁻ have the meanings indicated in the description. The complexes include a trivalent radioactive metal-imido group, typically a technetium- or rhenium-imido group, strongly stabilized by the presence of an ancillary tridentate hetero-diphosphine ligand L¹, which allows the formation of substitution-inert [(Me=N-R)L¹] moieties. Such moieties are fixed in an intermediate [(Me=N-R)Y₂L¹]⁺ compound which contains two labile, cispositioned, Y ligands, where Y is preferably an halide group. The latter are easily replaced by a bidentate ligand L² to give the final [(Me=N-R)L¹L²]⁺ Z⁻ heterocomplexes. The complexes of the invention are useful for the preparation of radiopharmaceuticals: in fact, a bioactive fragment which confers biological target-seeking properties can be introduced either on the L² framework or the imido R group.